

DNA REPORT WRITING-MIXTURES

A. SCOPE

The laboratory report must communicate both the analytical results and the conclusions of the examiner, conveying the essence of the expert testimony in court. The notes and other documentation must support the conclusions of the examiner. Decisions may be made by police officers, attorneys and the courts based on the report alone without examiner clarification, so the report should be able to stand alone. The report must contain the information required in the Laboratory Quality Assurance Manual and the FBI DNA Quality Assurance Audit Document.

Typical casework reporting should follow the recommended reporting statements, as appropriate. It is recognized that not every situation can be represented by these statements and that it may be necessary to modify the statements to accurately reflect the results.

B. REPORTING STATEMENTS

B.1. REPORTING THE NUMBER OF CONTRIBUTORS

B.1.1 Scenario Example: a mixed DNA profile is obtained. The number of contributors is not clear cut (e.g. peak imbalance and low level DNA):

Reporting Statement: The results from the **EVIDENCE** indicate at least **MINIMUM NUMBER** sources of DNA.

Or

Reporting Statement: The DNA results obtained from the **EVIDENCE** indicate at least **MINIMUM NUMBER** contributors.

B.1.2 Scenario Example: a mixed DNA profile is obtained consisting of two contributors, one male and one female, no indications of a third contributor.

Reporting Statement: The DNA results obtained from **EVIDENCE** indicate contributions from two individuals, one female and one male.

B.1.3 Scenario Example: a mixed DNA profile is obtained consisting of three contributors, a dominant, a minor, and a trace.

Reporting Statement: The results from the **EVIDENCE** indicate three sources of DNA consisting of/including a dominant, a minor, and a trace contributor.

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B.1.4 Scenario Example: a mixed DNA profile is obtained and from the results obtained at Amelogenin it is clear that the majority of the contributors are male (i.e. 2 out of 3 contributors, 3 out of 4 contributors, etc.)

Reporting Statement: The DNA results obtained from the **EVIDENCE** indicate contributions from at least three individuals, the majority of which are male.

B.1.5 Scenario Example: a mixed DNA profile is obtained consisting of three contributors. There is not a clear single source dominant profile but two dominant sources of approximately equal contributions and a minor source.

Reporting Statement: The results obtained from the **EVIDENCE** indicate at least three sources of DNA, consisting of/including two dominant sources of approximately equal contributions and a minor source.

B.1.6 Scenario Example: a mixed DNA profile consisting of at least three contributors is obtained from an intimate item of evidence, for example a vaginal swab. One of the contributors is the source of the intimate sample.

Reporting Statement: The results from the **EVIDENCE** indicate at least two sources of DNA foreign to **NAME**.

B.2. REPORTING STATISTICS ON MIXTURES

NOTE 1: "Partial dominant" and "dominant partial", along with "mixed partial" and "partial mixed" are all acceptable statements, i.e. the order of these words in the aforementioned combinations can be chosen by the analyst.

NOTE 2: Any statistics reported using the following statements should have four significant figures.

B.2.1 Scenario Example: The (2 or more person) mixture does not have a discernable dominant DNA profile. A single individual is being reported as contributing to the mixture result; applying statistics to loci where there is no indication of drop out. Additional sources of the DNA are unidentified.

Reporting Statement: Comparison of DNA profiles showed the mixed DNA profile from the **EVIDENCE** contains the DNA fragments represented in the DNA profile from the **NAME** reference sample. Based upon these results, **NAME** cannot be excluded as a **source of / contributor to** the mixed DNA profile. Approximately 1 in **MOST COMMON STATISTIC** individuals could have contributed to this mixture. **NAME** is excluded as a source of this mixed DNA profile.

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B.2.2 Scenario Example: A dominant and minor profile can be determined in a mixed pattern. Frequency values above 1 in 8 trillion. The minor DNA profile is too low to make any conclusions.

Reporting Statement: Comparison of DNA profiles showed the DNA profile from the **NAME** reference sample to be the same as the dominant DNA profile from the **EVIDENCE**. The estimated frequency of this matching DNA profile is approximately 1 in **MOST COMMON STATISTIC (7.356 quintillion (7.356 x 10¹⁸))** individuals. Based upon these results, it is reasonable to conclude that **NAME** is the source of this dominant DNA profile. **NAME** is excluded as the source of this dominant DNA profile. Due to a low level of DNA, no conclusions are being offered for the minor DNA results obtained from the **EVIDENCE**.

B.2.3 Scenario Example: A dominant and minor profile can be determined in a mixed pattern. Frequency values below 1 in 8 trillion. The minor DNA profile is too low to make any conclusions.

Reporting Statement: Comparison of DNA profiles showed the DNA profile from the **NAME** reference sample to be the same as the dominant DNA profile from the **EVIDENCE**. The estimated frequency of this matching DNA profile is approximately **1 in MOST COMMON STATISTIC (7.356 billion (7.356 x 10⁹))** individuals. Based upon these results, **NAME** cannot be excluded as a source of this dominant DNA profile. **NAME** is excluded as the source of the dominant DNA profile obtained from **EVIDENCE**. Due to a low level of DNA, no conclusions are being offered for the minor DNA results obtained from the **EVIDENCE**.

B.2.4 Scenario Example: Two individuals contribute to a mixture. Statistics applied to loci that have no indications of dropout.

Reporting Statement: Comparison of DNA profiles showed the mixed DNA profile from the **EVIDENCE** contains the DNA fragments represented in the DNA profiles from the **NAME** and **NAME** reference samples. Based upon these results, both **NAME** and **NAME** cannot be excluded as sources of the mixed DNA profile obtained from the **EVIDENCE**. Approximately 1 in **MOST COMMON STATISTIC** individuals could have contributed to this mixture. **NAME** is excluded as a source of the mixed DNA profile obtained from **EVIDENCE**.

B.2.5 Scenario Example: Two individuals contribute to a mixture. The minor profile is reported as part of the mixture as it cannot be discerned.

Reporting Statement: Comparison of DNA profiles showed the mixed DNA profile from the **EVIDENCE** contains the DNA fragments represented in the DNA profiles from the **NAME** and **NAME** reference samples. Based upon these results, both **NAME** and **NAME** cannot be excluded as sources of the mixed DNA

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profile obtained from the **EVIDENCE**. Approximately 1 in **MOST COMMON STATISTIC** individuals could have contributed to this mixture. **NAME** is excluded as a source of the mixed DNA profile obtained from **EVIDENCE**.

B.2.6 Scenario Example: A differential extraction was performed on **EVIDENCE STAIN**. A single source DNA profile is obtained in the sperm fraction. A three person mixed DNA profile is obtained in the epithelial fraction. The single source profile obtained in the sperm fraction (Profile X) accounts for a significant portion of the dominant alleles in the mixed DNA profile in the epithelial fraction. Profile X can be subtracted from the mixed DNA profile leaving a single source dominant DNA profile and a minor DNA profile. Profile X does not have to be accounted for as being in the epithelial fraction in the report but it must be indicated as such in the table. The following language can then be used when source statistics are obtained for the dominant DNA profile and a low level minor:

Reporting Statement: Comparison of DNA profiles showed the DNA profile from the **NAME** reference sample to be the same as the DNA profile from the sperm fraction from the **EVIDENCE STAIN**. The estimated frequency of this matching DNA profile is approximately 1 in **MOST COMMON STATISTIC (7.356 quintillion (7.356×10^{18}))** individuals. Based upon these results, it is reasonable to conclude that **NAME** is the source of this DNA profile. **NAME** is excluded as a source of the mixed DNA profile obtained from **EVIDENCE**.

The results from the epithelial fraction from the **EVIDENCE** indicate at least two sources of DNA. Comparison of DNA profiles showed the DNA profile from the **NAME** reference sample to be the same as the dominant DNA profile from the epithelial fraction from the **EVIDENCE**. The estimated frequency of this matching DNA profile is approximately 1 in **MOST COMMON STATISTIC (7.356 quintillion (7.356×10^{18}))** individuals. Based upon these results, it is reasonable to conclude that **NAME** is the source of this dominant DNA profile. **NAME** is excluded as the source of the dominant DNA profile obtained from **EVIDENCE**. Due to a low level of DNA, no conclusions are being offered for the **minor DNA profile / minor DNA results**.

B.3. REPORTING NO CONCLUSIONS

B.3.1 Scenario Example: No conclusions can be offered for the results obtained from the mixed DNA profile due to the number of contributors. This paragraph should follow the dominant associated paragraph.

Reporting Statement: Due to a low level of DNA and the number of contributors, no conclusions can be offered.

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Or

Reporting Statement: Due to the nature of the mixture no conclusions can be offered.

B.4. REPORTING EXCLUSIONS

B.4.1 **NAME** is excluded as a source of the detected mixture obtained from the **EVIDENCE**.

B.4.2 **NAME and NAME** are excluded as **sources of / contributors to** the detected mixture obtained from the **EVIDENCE**.

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